Meridian 1

Intelligent peripheral equipment circuit cards for Portugal

Option 11 - Description and Installation

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About this document

This document is a Supplement to the Option 11 *Installation guide (553-3011-210). It describes the functions and applications of the following circuit cards that are available for use in Portugal:*

- NTCK24AA Central Office Trunk card
- NT5K83BB E&M Tie Trunk card
- NT5K02KA Flexible Analog line card
- NT5K96KA Flexible Analog line card.

Central office trunk circuit card

Functional description

The NTCK24AA Central Office trunk card provides the interface between the Option 11 system and up to eight analog Central Office (CO) trunks. It can be installed in slots 1-10 in the Option 11 main cabinet and in any slot in the expansion cabinet.

Common features

The NTCK24AA Central office trunk card:

- Analog to digital and digital to analog conversion for 8 audio paths.
- Software selectable A/μ law operation.
- Interfaces each PCM digital signal to one DS30X channel in A10 format.
- Transmit and receive SSD signalling messages over a DS30X signalling channel in A10 format.
- Provides indication of board status via the faceplate mounted LED.
- Provides disabling of individual units or the entire board under software control.
- Provides outpulsing on-board, with downloadable make to break ratios during configuration.
- Provide loopback of PCM signals to DS30X for factory test and diagnostic purposes.
- Self-test pass indication with faceplate LED.

- Supports loop start signalling.
- Provides termination, and transhybrid balance impedance to match the Portuguese 600Ω impedance network.
- Provides detection and counting feature for 12kHz PPM.
- Provides direct reporting of 12kHz PPM pulses to software in buffered or unbuffered format.
- Supports B34 Static Loss Plan Downloading (Type 12 message set).

Physical description

Measurements

Each NTCK24AA Central office trunk card measures as follows:

Height:	318 mm (12.5 in.)
Depth:	254 mm (10 in.)

Switch settings

There are no option settings on the NTCK24AA Central office trunk card. All settings are configured in software.

Connections

The NTCK24AA Central office trunk card has eight units. Each trunk unit on the card connects to the backplane through an 80-pin connector. The backplane is cabled to the input/output (I/O) panel, and the I/O panel is cabled to the cross-connect terminal. At the cross-connect terminal, each unit connects to external apparatus by tip and ring leads.

Hardware installation

Tables 1 to 3 provide cross connect information for the NTCK24AA Central Office Trunk card.

Table 1
NTCK24AA Central Office Trunk connections

Lead	Pins	Pair color	Unit number
T0 R0	26 1	W-BL BL-W	Unit 0
	27 2	W-O O-W	
T1 R1	28 3	W-G G-W	Unit 1
	29 4	W-BR BR-W	
T2 R2	30 5	W-S S-W	Unit 2
	31 6	R-BL BL-R	
T3 R3	32 7	R-O O-R	Unit 3
	33 8	R-G G-R	
T4 R4	34 9	R-BR BR-R	Unit 4
	35 10	R-S S-R	
T5 R5	36 11	BK-BL BL-BK	Unit 5
	37 12	BK-O O-BK	
T6 R6	38 13	BK-G G-BK	Unit 6
	39 14	BK-BR BR-BK	
T7 R7	40 15	BK-S S-BK	Unit 7
	41 16	Y-BL BL-Y	

Self-test

When the card is installed, the red Light Emitting Diode (LED) on the faceplate flashes as the self-test runs. If the self-test completes successfully, the card is automatically enabled (if it has been configured in software) and the LED goes out. If the self-test fails, the LED will remain lit.

Trunk configuration

Route Data Block

Each trunk unit on the NTCK24AA central office trunk card is attached to a route with an associated route data block. Trunk timers are configured on a route basis.

Note: All prompts are defaulted except for those noted in Table 1-2. Default values are shown in brackets.

Table 2
LD 16 Route Data Block

Prompt	Response	Comments
REQ	NEW	
TYPE	RDB	Define a new Route Data Block
CUST	0-99	Enter customer number
ROUT	0-511	Enter route number
TKTP	COT	Define trunk type as central office
ICOG	IAO	Incoming and Outgoing trunk
ACOD	XXXXXXX	Trunk route access code
CNTL	YES	Change a trunk timer
TIMER	RGV 384	Ring Validation Timer = 384 ms
DTD	YES(NO)	Dial tone detector performed / not performed on this route If Yes, answer the following 2DT and XTDT prompts.

Prompt	Response	Comments
2DT	YES	
XTDT	(0)-7	Extended tone detector table number programmed in overlay 97 (Enter 0 if the table has not already been programmed in LD 97))
NEDC	ETH	Near end disconnect control from either end
FEDC	ETH	Far end disconnect control from either end
CDR	YES, (NO)	CDR trunk route. If Yes, answer OAL and MR prompts.
OAL	YES, (NO)	CDR on outgoing calls
MR	PPM	Buffered PPM signals counted on this route

Trunk Data Block

Use overlay 14 to configure each of the trunk units on the NTCK24AA central office trunk. Default values are shown in brackets in Table 3.

Table 3
LD 14 Route Data Block

Prompt	Response	Comments
REQ	NEW	Define a new trunk unit
TYPE	COT	Central Office Trunk
TN	CC UU	Terminal number of the unit: CC=card number UU=unit number
CDEN	(8D)	Card density is 8D (default)
XTRK (see note)	XCOT	Type is IPE COT
SIGL	LOP	Loop Start signaling
PPID	07	PPM country Identification
BTID	07	Busy Tone country identification
CLS	DTN, (DIP)	Digitone signaling, (Digipulse)

Note: This prompt is required only for the first unit defined on each NTCK24AA card.

Technical description

Power requirements

Table 4 provides the power requirements for the NTCK24AA Central office trunk card.

Table 4
NTCK24AA Power requirements

V (volts)	I (mA) Idle	I (mA) Seize
+15V (note 1)	170	252
-15V (note 1)	170	249
+8.5V (note 2)	100	100
+5V	160	322

Note 1: Analog circuitry is powered with +/- 12V generated from +/- 15V

Note 2: 8.5V is regulated to provide 5V.

Environmental specifications

Table 5 provides the environmental specifications for the NTCK24AA central office trunk card.

Table 5
NTCK24AA environmental specifications

Parameter	Limit
Operating temperature	0 to 40 degrees C, ambient
Operating humidity	10 to 95% relative humidity
Storage temperature	-45 to +70 degrees C
Storage humidity	10 to 95% relative humidity

Transmission parameters

Pad settings are not required in Portugal. Loss values for the NTCK24AA Central office trunk card are as follows:

Analog to Digital loss:0 dB

Digital to Analog loss:-3 dB (plus or minus 0.5 dB)

Trunk types description

Each NTCK24AA Central office trunk card supports:

- 8 individual trunk circuits
- Loop start operation
- 12 kHz Periodic Pulse Metering (PPM)

Individual Trunk Circuit

The XFCOT contains 8 individual trunk circuits. Each circuit will consist of one channel of a quad codec (B34), signalling and control relays, a signalling hybrid, transmission hybrid, audio transformer and a PPM detection hybrid.

The signalling hybrid contains the relay control and detector circuits required to provide various unit functions. A ringing detector per unit is provided.

The transmission hybrid contains the circuitry to perform the following functions;

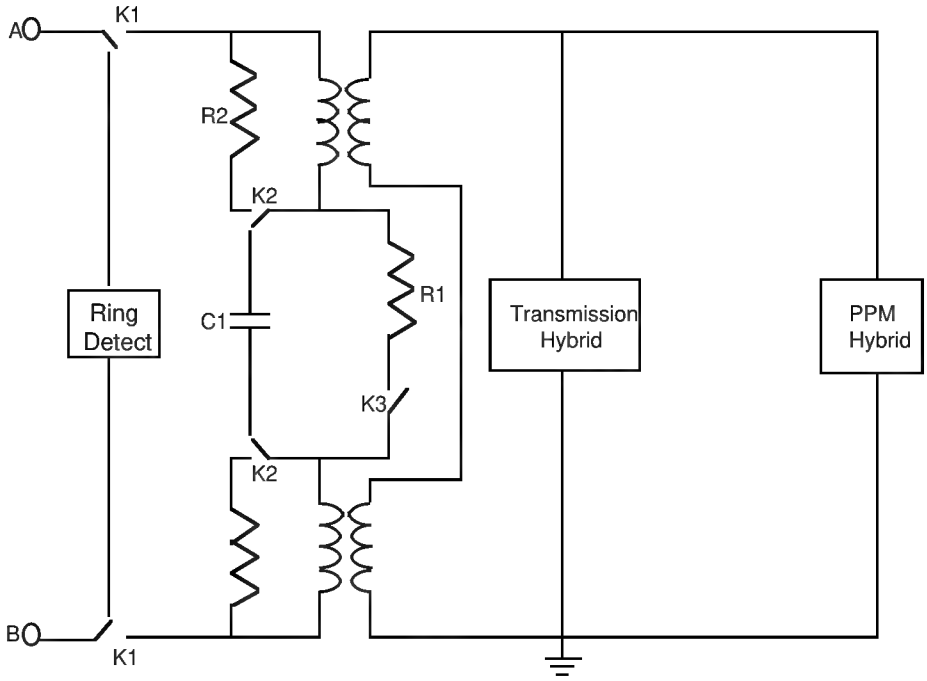
- 2 to 4 wire conversion and vice versa
- Transhybrid balance
- AC terminating impedance (600Ω)

Tx / Rx Amplifiers

The PPM hybrid will contains the circuitry necessary to detect 12kHz metering pulses. In buffered format, a count of the pulses detected on each unit will be maintained by a central controller and reported to software at the end of the call, and in unbuffered format each individual pulse will be reported directly to software. The bounce/debounce parameters for pulse timing and validation will be downloadable from software.

Figure 1 provides a block diagram of the trunk unit. All relays are shown in normal or unenergized positions.

Figure 1
NTCK24AA loop start signaling



R1 = 0 ohms for Portugal

Loop start signalling

Each unit on the NTCK24AA card supports loop start signaling for incoming and outgoing central office calls.

Idle state

In the idle state, the ringing detector is connected across the A and B wires, presenting a high impedance to the Central Office.

Far End Originated

Ringing voltage is applied to the A and B wires. If the ringing signal falls within the limits for detection, it will be detected within 100ms of application. A message is sent to software to indicate that an incoming ring burst has been detected. The output of the ringing detector is debounced and timed in software. When the incoming ringing burst has been properly validated, a seize message is sent by S/W to the XFCOT. K1 and K3 change over, presenting a low loop impedance across the A and B wires.

Near End Originated

The PBX originates a call by activating K1 and K3, which switches out the ringing detector and presents a low loop impedance across the A and B wires. Address information is then sent to the CO, either as decadic pulses or DTMF voiceband signals. Relay K3 controls the DC path, and provides decadic outpulsing by opening and closing.

Near End Release

Relay K3 opens, thus breaking the DC loop. Relay K1 remains in the loop state, and capacitor C1 remains in circuit, thus presenting a low impedance AC path for metering pulses. After approximately 500 ms, relay K1 times out and changes over, breaking the AC path and re-inserting the ringing detector across the A and B wires.

Far End Release

A far end release (in the form of a Battery Reversal or a Busy Tone Signal) will not be detected by the Portuguese XFCOT. The trunk unit will remain active until a near end release message is received from S/W.

Features description

Periodic Pulse Metering (PPM)

The central office applies a 12 Hz longitudinal signal to the tip and ring leads at the start and stop of each call or during a call. All trunk units on the NTCK24AA card can be individually configured to detect the 12Hz signal.

Periodic Pulse Metering allows the user of a telephone on a Meridian 1 to keep an accurate record of central office calls for billing or administration purposes.

For more information on PPM, refer to *Generic X11 Including Supplementary Features appendix 2 to 553-2311-105.*

E&M tie trunk circuit card

Functional description

The NT5K83BB E&M Tie trunk card provides the interface between the Meridian 1 system and up to four analog trunks. It can be installed in any PE slot that supports Intelligent Peripheral Equipment (IPE).

The NT5K83BB E&M Tie trunk card supports four analog trunks. Each trunk circuit can be individually configured as:

- 4-wire E&M Type V and II
- Recorded Announcement trunk (RAN)
- Music trunk (MUS)
- Paging trunk (PAG)

Common features

The NT5K83BB E&M Tie trunk card:

- is equipped with four trunk units
- converts transmission signals from analog-to-digital and from digital-to-analog
- enables and disables individual units or the entire card under software control
- provides outpulsing on the card. Make break ratios are defined in software and down loaded during power up and by software commands.

- provides indication of card status from self-test diagnostics on the LED
- allows trunk type to be configured on a per unit basis in software
- provides termination against 600 ohms for 4-wire E&M trunk circuits
- provides paging (PAG), recorded announcement (RAN), and Music interfaces.

Physical description

Measurements

Each NT5K83BB E&M Tie trunk card measures 12.5 in. (320 mm) in height by 10 in. (255mm) in depth.

Switch settings

There are no option switches on the NT5K83BB E&M Tie trunk card. All settings are configured in software.

Connections

The NT5K83BB trunk card has four units. Each unit connects to the shelf backplane through an 80-pin connector. The backplane is cabled to the input/output (I/O) panel which is then cabled to the cross-connect terminal.

Tables 1 to 5 show cross connect terminations for the NT5K83 E&M trunk card.

Table 6
NTCK24AA E&M 2-wire Type 5 Trunk connections

Lead	Pins	Pair color	Unit number
T0 R0	27 2	W-O O-W	Unit 0
E M	28 3	W-G G-W	
T1 R1	31 6	R-BL BL-R	Unit 1
E M	32 7	R-O O-R	
T2 R2	35 10	R-S S-R	Unit 2
E M	36 11	BK-BL BL-BK	
T3 R3	39 14	BK-BR BR-BK	Unit 3
E M	40 15	BK-S S-BK	

Table 7
NT5K83BB E&M 2-Wire Paging trunk connections

Lead designations	Pins	Pair color	Unit number
T0 R0	27 2	W-O O-W	Unit 0
A PG	29 4	W-BR BR-W	
T1 R1	31 6	R-BL BL-R	Unit 1
A PG	33 8	R-G G-R	
T2 R2	35 10	R-S S-R	Unit 2
A PG	37 12	BK-O O-BK	
T3 R3	39 14	BK-BR BR-BK	Unit 3
A PG	41 16	Y-BL BL-Y	

Table 8
NT5K83 E&M 2-wire Recorded Announcement trunk connections

Lead designations	Pins	Pair color	Unit number
T0 R0	26 1	W-BL BL-W	Unit 0
SIG B SIG A	29 4	W-BR BR-W	
T1 R1	30 5	W-S S-W	Unit 1
SIG B SIG A	33 8	R-G G-R	
T2 R2	34 9	R-BR BR-R	Unit 2
SIG B SIG A	37 12	BK-O O-BK	
T3 R3	38 13	BK-G G-BK	Unit 3
SIG B SIG A	41 16	Y-BL BL-Y	

Table 9
NT5K83 E&M 4-Wire Type 5 connections

Lead designations	Pins	Pair color	Unit number
TA TB	26 1	W-BL BL-W	Unit 0
RA RB	27 2	W-O O-W	
E M	28 3	W-G G-W	
TA TB	30 5	W-S S-W	Unit 1
RA RB	31 6	R-BL BL-R	
E M	32 7	R-O O-R	
TA TB	34 9	R-BR BR-R	Unit 2
RA RB	35 10	R-S S-R	
E M	36 11	BK-BL BL-BK	
TA TB	38 13	BK-G G-BK	Unit 3
RA RB	39 14	BK-BR BR-BK	
E M	40 15	BK-S S-BK	

Table 10
NT5K83 E&M 4-Wire Type 2 connections

Pair	Pins	Pair Color	I/O Panel Connector				Unit Number
			A	E	K	R	
RA/RB TA/TB	26 / 1 27 / 2	W-BL / BL-W W-O / O-W					Unit 0
E1/E2 M1/M2	28 / 3 29 / 4	W-G / G-W W-BR / BR-W					
RA/RB TA/TB	30 / 5 31 / 6	W-S / S-W R-BL / BL-R	S L	S L	S L	S L	Unit
E1/E1 M1/M2	32 / 7 33 / 8	R-O / O-R R-G / G-R	O T	O T	O T	O T	1
RA/RB TA/TB	34 / 9 35 / 10	R-BR / BR-R R-S / S-R	0	4	8	12	Unit 2
E1/E1 M1/M2	36 / 11 37 / 12	BK-BL / BL-BK BK-O / O-BK					
RA/RB TA/TB	38 / 13 39 / 14	BL-G / G-BK BK-BR / BR-BK					Unit
E1/E1 M1/M2	40 / 15 41 / 16	BK-S / S-BK Y-BL / BL-Y					3

Self-test

When the NT5K83BB trunk card is installed and power is applied to it, a self-test is performed on the card. The red faceplate LED on flashes three times, then remains continuously lit until the card is enabled in software. If the self-test fails, the LED will remain lit after the card is enabled.

Technical description

Power requirements

Table 6 lists the power requirements for the NT5K83BB trunk card.

Table 11
NT5K83BB Power requirements

Voltage	Active Current
+15.0 V dc	150 ma
- 15 V dc	160 ma
+8.5 V dc	35 ma
+ 5 V dc	110 ma
-48 V dc	80 ma

Environmental specifications

Table 7 provides the environmental specifications for the NT5K83BB E&M Tie trunk card.

Table 12
NT5K83BB Environmental specifications

Parameter	Absolute Limit
Operating temperature	10-45 degrees C, ambient
Operating humidity	20 to 80% RH (non condensing)
Storage temperature	-20 to +60 degrees C

Transmission parameters

Loss values for the NT5K83BB trunk card are provided in Table 8.

Table 13
Loss values for NT5K83BB

New loss plan	Analog-to-Digital	Digital-to-Analog
4-wire E&M	0 dB	0 dB
RAN	0 dB	N/A
PAG	N/A	3 dB
Old loss plan	**Analog-to-Digital**	**Digital-to-Analog**
4-wire E&M	0 dB	0 dB
RAN	4 dB	N/A
PAG	N/A	-3 dB

Note: Tolerance for loss plan is ± 0.5 dB

Trunk types description

Each unit on the NT5K83BB E&M Tie trunk card supports:

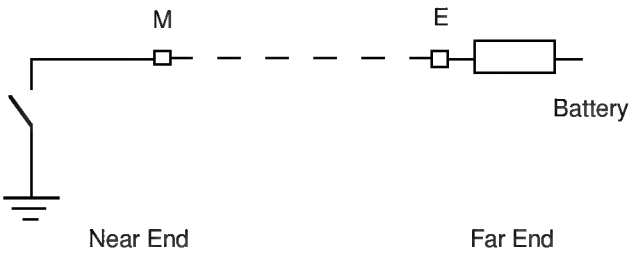
- 4-wire E&M trunk type 5 and 2
- Recorded Announcement (RAN) trunk
- Paging (PAG) trunk
- Music (MUS) trunk

For information on features and signaling arrangements, see *Generic X11 Including Supplementary Features* (PO730484, or NTCK09 in the U.K).

4-wire E&M Type 1 trunk operation

Type 5 E&M operation uses two signaling leads, E and M, that are electrically separated from the associated speech circuit. Signals are sent on the M lead and received on the E lead as shown in Figure 1.

Figure 2
E&M Type 5 signaling



Send signals

All signals are sent in the form of a contact between M and ground or an open circuit between M and ground.

Receive signals

Signals are received on the E lead by detecting the conditions applied to the M lead by the far end.

Idle state

In the Idle state, the M lead receives an "Idle signal" from the Meridian 1 and is ready to receive calls.

Seize

To place an outgoing call, the Meridian 1 at the near end sends a seizing signal through the M lead to the far end. The incoming end recognizes the seize signal and prepares to receive digits.

Dialing

Digits are sent through the near end M lead in the form of 10 pps pulses of the open-circuit condition.

Answer

When the called party answers, the far end sends an "answer" signal through the M lead.

Call disconnect

Either party can disconnect the call by applying a clear signal to the M lead. The far end applies a "clear back" signal, while the near end applies a "clear forward" signal. The circuit remains busy until both clear forward and clear backward signals have been exchanged.

Table 9 provides a summary of NT5K83BB DC-5 signaling states.

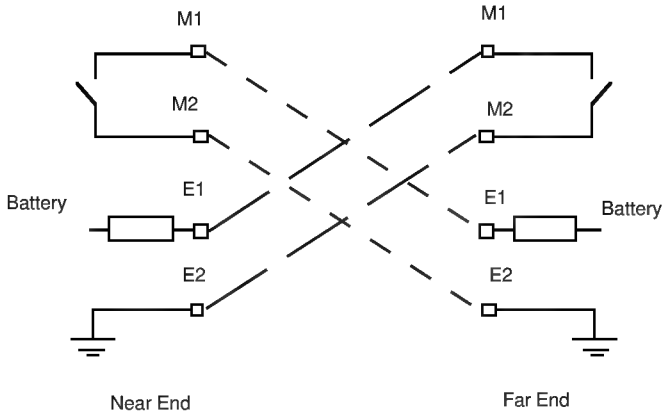
Table 14
Summary of NT5K83BB DC-5 signaling states

Signal	Outgoing PBX sending condition — M Wire	Incoming PBX sending condition — M Wire
Idle	Open circuit	Open circuit
Seize	ground	—
Digit Pulse	Open circuit pulses in step with dial pulses	—
Answer	—	Ground
Clear forward	Open circuit longer than 300 ms	—
Clear back	—	Open circuit for longer than 300 ms

4-wire E&M Type 2 trunk operation

Type 2 E&M operation uses two signaling pairs, E and M, that are electrically separated from the associated speech circuit. Signals are sent on the M pair and received on the E pair as shown in Figure 2.

Figure 3
E&M Type 2 signaling



Send signals

All signals are sent in the form of a contact make or break between the two M leads. In the make state there is a maximum of 200 V√Ω between the two M leads. In the break state there is a minimum of 100 kΩ between the M leads.

Receive signals

Signals are received on the E lead by detecting the contact make or break applied at the far-end on the M leads.

Idle state

In the Idle state the Meridian 1 applies an "idle signal" to the M leads to indicate that it is available to receive calls.

Seize

To place an outgoing call, the Meridian 1 at the near end sends a seizing signal through the M leads to the far end. The incoming end (far end) recognizes the seize signal, busies the circuit against outgoing calls, and prepares to receive digits.

Dialing

Digits are sent through the near end M leads in the form of 10 pps pulses of the open-circuit condition.

Answer

When the called party answers, the far end sends an "answer" signal through the M leads.

Call disconnect

Either party can disconnect the call by applying a clear signal to the M leads. The far end applies a "clear back" signal, while the near end applies a "clear forward" signal. The circuit remains busy until both clear forward and clear backward signals have been exchanged.

Table 10 provides a summary of NT5K83BB DC-5 Type 2 signaling states.

Table 15
Summary of NT5K83BB DC-5 Type 2 signaling states

Signal	Outgoing PBX sending condition — M Leads	Incoming PBX sending condition — M Leads
Idle	Contact break	Contact break
Seize	Contact make	—
Digit Pulse	Contact break pulses in step with dial pulses	—
Answer	—	Contact make
Clear forward	Contact break for longer than 300 ms	—
Clear back	—	Contact break for longer than 300 ms

Recorded Announcement trunk operation

When used in the Recorded Announcement mode, the trunk circuit is connected to a customer provided recorded announcement machine or a music source.

The NT5K83BB E&M Tie trunk card supports the following types of announcement machines:

- Start mode announcement machines
- Continuous mode announcement machines

Recorded announcement machines supported include the Cook Digital 4-channel announcer and the Audichron HQI-112.

Start mode

In start mode, the E&M Tie trunk card provides a startpulse to the announcement machine to begin playback of the message. The announcement source requires the following:

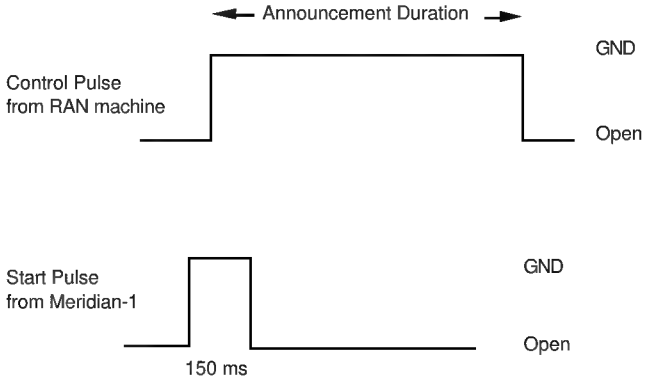
- an impedance of 4 ohms or less
- ground to the trunk unit when playing and an open circuit when idle. This is done through a control lead to the trunk circuit.
- default signal level of -9 dBm (in 600Ω) adjustable to a level of 10 dBm.

To start the announcement, the NT5K83BB E&M Tie trunk card provides a momentary ground signal (150 ms) to the source. The announcement machine should then start playing its message.

The NT5K83BB trunk card expects status information from the announcement machine, that is, whether it is idle or playing. For this reason, the announcement machine requires a control lead to the trunk circuit.

Figure3 shows recorded announcement in start mode.

Figure 4
Recorded announcement - start mode



Continuous mode

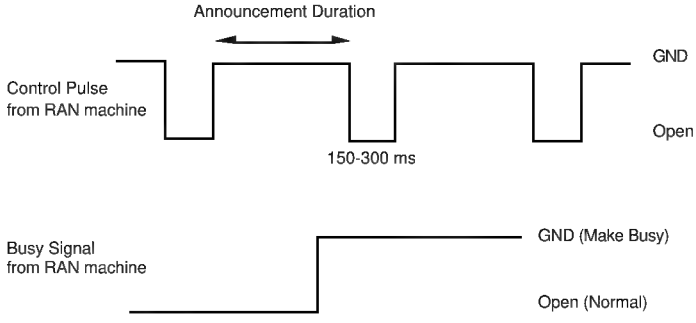
The requirements for continuous mode announcement machines are as follows:

- an impedance of 4 ohms or less
- generation of a control pulse (150 - 300 ms) at the start of the announcement period
- default signal level of -9 dBm (in 600Ω) adjustable to a level of 10 dBm.

The announcement machine may provide a separate busy signal when the machine is recording or erasing a message or if the machine is malfunctioning. The busy signal will be used by the Option 11 for maintenance purposes.

Figure 4 shows recorded announcement in continuous mode.

Figure 5
Recorded announcement - continuous mode



Music source

The music source should provide an impedance of 600 Ω. The default signaling level should be -9 dBm (in 600Ω) adjustable to a level of 10 dBm.

Paging trunk operation

When used in the paging mode, the trunk circuit is connected to a customer-provided paging amplifier system. When accessed, the card provides a loop closure. In a typical application, the loop closure will cut off a music supply and switch the paging trunk transmission path to the paging amplifier.

Flexible analog line circuit card

Functional description

The Flexible analog line card provides an interface for up to 16 analog (500/2500-type) telephones lines. It can be installed in slots 1-10 in the Option 11 main cabinet and in any slot in the expansion cabinet.

There are two types of Flexible Analog Line cards available for use in Portugal:

- the NT5K02KA line card with message waiting
- the NT5K96KA line card without message waiting.

Common features

Both Flexible Analog line cards provide the following features:

- support of digipulse or digitone telephones
- telephone on-hook and off-hook detection based on loop current
- ground button detection
- relay for connecting an ac ringing signal
- collection of dial pulses (10 and 20 pps) from 500-type telephones
- analog to digital and digital to analog conversion for 16 analog telephone lines
- terminating impedance of 600 ohms

- software selectable A-Law or μ-Law companding
- provision of line current to telephones. Line current is limited on short loops or under fault conditions. Otherwise, current varies according to loop length to allow automatic gain compensation.

Physical description

Switch settings

There are no option switches on the Flexible Analog line card. All settings are configured in software.

Connections

The Flexible Analog line card has 16 units. Each unit connects to the shelf backplane through an 80-pin connector. The backplane is cabled to the input/output (I/O) panel which is then cabled to the cross-connect terminal. At the cross-connect terminal, each unit connects to external apparatus by tip and ring leads.

Faceplate LED

The faceplate of the NT5K02KA is equipped with a red LED which lights when all the assigned units on the circuit card are disabled.

Technical description

Power requirements

Table 1 lists the power requirements for Flexible Analog line card.

Table 16
NT5K02KA and NT5K96KA power requirements

Voltage	Idle current	Maximum current (all units active)
+15.0 V dc	120 ma	120 ma
-15.0 V dc	24 ma	24 ma
+ 8.5 V dc	250 ma	280 ma
-48.0 V	0 ma	320 ma
- 48.0 V dc	60 ma	700 ma
Ring V ac	0 ma	160 ma (See note)

Note: This figure reflects 10 ma for ringing one telephone per unit. There may be more than one telephone or ringer on a unit.

Environmental specifications

Table 2 lists the environmental specifications of the Flexible Analog line card.

Table 17
NT5K02KA and NT5K96KA environmental specifications

Parameter	Specifications
Operating temperature	0 to 45 degrees C, ambient
Operating humidity	5 to 95 % Relative Humidity
Storage temperature	- 40 to + 70 degrees C

Signalling

Loop operation

The Flexible Analog Line Card is loop start, with a loop limit of 1300 Ω at -48 V including the telephone set. The minimum and maximum values of current feed are 29 ma to 40 ma respectively. A resistance of more than 10 kohm is recognized as an idle or release signal.

Table 3 lists the number of telephone sets that can be supported by the loop.

Table 18
Loop limits

Loop resistance including telephone sets	Number of telephone sets
350 Ω or less	2
Over 350 Ω to a maximum of 1300 Ω	1

Ringers

A maximum of 5 NE-C4A ringers can be supported on one unit. Ringing is supplied to the telephones at a frequency of 25 Hz at a voltage of 86 Vrms. The peak voltage is no higher than 125V.

Message waiting indicator

The message waiting indicator consists of a lamp flashing at a rate of 1 Hz at the telephone set. (A continuously lit lamp as a message indicator is not provided). The lamp is activated as a result of a reversal of the Tip and Ring leads.

Digipulse dialing

The Flexible Analog line card collects all digits of 7-13 pps.

Ground button detection

The ground button detector sends a recall signal 30 to 50 ms after the application of a ground on either the Tip or Ring of the line. The loop resistance to the ground signal can be between 0 and 500 Ω.

The ground must be applied for a time greater than the minimum hookflash time. This time is downloaded from software and is known as the ground button validation time.

Transmission parameters

Loss values for the NT5K02KA and NT5K96KA Flexible Analog Line cards are as follows:

Analog to Digital loss: 0.0 dB +/- 0.5 dB

Digital to Analog loss:+7.0 dB +/- 0.5 dB

Meridian 1

Intelligent peripheral equipment circuit cards for Portugal

Option 11 - Description and Installation

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